

THE SWATOW TYPHOON OF AUGUST, 1922.

The Weather Bureau has received the following letter and report concerning the disastrous typhoon at Swatow in August of this year from Capt. G. St. M. Stocker, of the Swatow Pilotage Association. Captain Stocker has been acting as cooperative observer, and the location of his station near the mouth of the Han River enabled him to furnish an invaluable series of observations, but only made under the most trying conditions. Additional remarks by Captain Stocker will be found elsewhere.¹

AUGUST 29, 1922.

To the CHIEF OF THE UNITED STATES WEATHER BUREAU,
Department of Agriculture, Washington, D. C.

SIR: Please receive herewith a copy of a barograph record taken from my instrument at Double Island, at the entrance to the port of Swatow, in the first week of this month.

Such observations as I was enabled to take prior to and during the storm have been compiled in the form of notes, and I send you these also in the hope that they may prove of some service to you.

You will appreciate the fact that in such a heavy storm, attended as this was by enormous destruction of life and property, it is exceedingly difficult for an observer (whose house is crumbling away piecemeal all around him) to take accurate observations of the true direction of the wind, but I was able to record the barometer regularly and accurately, so these readings may be accepted as fairly correct.

People in Swatow, only 4 miles west of me, agree that they experienced a period of calm, whereas I and others here only experienced a lull, commencing at about 1:45 a. m., the time of the minimum reading of the barometer, and lasting for some three-quarters of an hour, during which time the wind veered from north to south by way of east with varying force between 3 and 8, when, settling from south, it blew by 3:00 a. m. with force 12.

When all the data necessary have been received by you I would esteem it a favor if you would let me have a tracing of the track of this storm, showing various directions and forces of winds at various points simultaneously, with corresponding barometer readings.

I am, Sir, very truly yours,

G. ST. M. STOCKER.

REPORT ON THE SWATOW TYPHOON.

A storm, accompanied by a tidal wave, passed over Swatow and neighborhood on the 2d of August, 1922, devastating a large part of the Han River delta and taking a heavy toll of life and property.

Apart from such telegraphic reports of the existence of a storm to the eastward of the Balintang Channel as came to hand, it was evident to observers on Double Island, at the entrance to the port of Swatow, as early as the evening of July 29 that a depression was moving toward the coast of China, the barometer being rather low and there being a pronounced swell on the bar.

By the morning of August 2 this swell had increased perceptibly, though there was but little wind. The sky was overcast and gloomy and the atmosphere oppressive, light showers falling occasionally.

Calms and variable light airs were experienced till noon, and then the wind came away from the northeast, force 4-6, with heavy showers. The swell on the bar became very heavy and the sea outside turbulent.

Just after sunset the whole sky and atmosphere assumed a dark yellow hue for about half an hour, which was commented on by many.

The barometer readings noted in this report are subject to a correction of +0.15 inch, the last comparison having been made on March 4, 5, 6, 1922. The time on the barograph record is one hour slower than local standard time, i. e., 120th meridian time. The readings recorded here are those of the aneroid, not the barograph.

By 8:00 p. m. on the evening of the 2d the aneroid read 29.20 inches, wind NE., force 6-8, sky Nimbus, 10.

After 8 o'clock the wind slowly backed to north, increasing in force to 10, and so continued till about 1:45 a. m. on August 3.

Shortly before 1 o'clock on the morning of August 3, it was noticed that the water was much higher than normal, and by 2 o'clock it had risen to a height of about 8 feet above normal high water.

From 11:00 p. m. to 1:00 a. m. the barometer dropped each half hour as follows: 0.13 inch, 0.15 inch, 0.35 inch, 0.45 inch. After that the drop was slower, being as follows: 0.15 inch, 0.10 inch, and by 1:45 a. m. it had reached its minimum of 27.55 inches.

After 1:45 a. m. the barometer rose rapidly, the wind veering from north to NE., force 3-6, and at 2:00 a. m. the barometer read 27.85 inches, the wind continuing to veer to the southward and increasing. At 2:30 a. m. the barometer read 28.10 inches, wind SE., force 5-8, and at 3:00 a. m. it read 28.60 inches, wind south, force 12.

The wind continued from the south with hurricane force till about 4:30 a. m., the barometer rising rapidly, until by 5:00 a. m. it had reached 29.40 inches, and the wind had dropped since 4:30 to force 5-7.

Both foreign and native shipping suffered heavily. Houses that escaped being blown down were washed away by the waters which spread over the whole country side, and the loss of life was enormous.

Owing to the general inundation, as well as to the extremely heavy rainfall which accompanied the storm, it was several days before the country became drained off, and meanwhile the tides appeared to lose their rise and fall, the surface current flowing to seaward nearly all the time, and the general level remaining above normal.

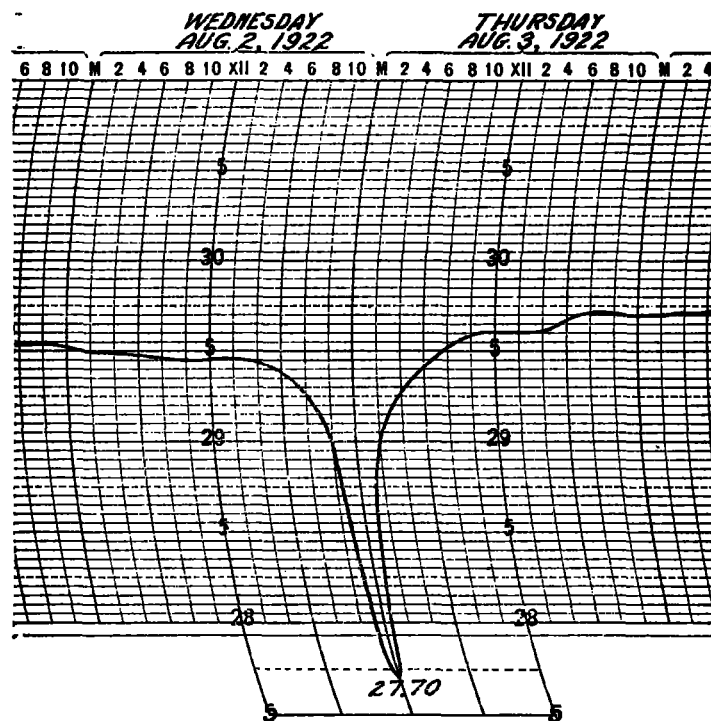


Fig. 1. Copy of barograph trace, extended, during passage of Swatow typhoon. Office Swatow Pilotage Association, Double Island, about 4 miles below city.

TEN DEPRESSIONS OR TYPHOONS IN THE FAR EAST DURING THE MONTH OF AUGUST, 1922.

By REV. JOSÉ CORONAS, S. J.

(Weather Bureau, Manila, P. I.)

August has been a very stormy month for the Far East. There have been at least five well-developed typhoons, while lack of observations makes it impossible for the present to decide whether the other five atmospheric disturbances shown in our Weather Maps were also, at least for some time, real typical typhoons, or only depressions of less importance.

The Swatow typhoon.—This will go down to history as one of the worst, if not the worst typhoon, that has ever visited the Far East. Our weather map of 2 p. m., July 29, showed clearly this typhoon as situated over 300 miles to the east of central Luzon, although observations from Guam and Yap seem to point out as the probable and approximate origin of the typhoon 138° longitude E. and 14° latitude N. on July 27.

The position of the center at 6 a. m. of July 30 to August 2 was as follows:

July 30, 6 a. m., 128° 25' longitude E. 16° 00' latitude N.
July 31, 6 a. m., 125° 40' longitude E. 16° 50' latitude N.
August 1, 6 a. m., 122° 45' longitude E. 18° 25' latitude N.
August 2, 6 a. m., 119° 30' longitude E. 21° 05' latitude N.

¹ See article, North Pacific Ocean.

The typhoon moved WNW. up to August 31, but fortunately for the Philippines it inclined gradually northwestward on August 31, thus crossing the Archipelago through the Babuyanes, a group of islands whose population is rather insignificant, and from which no information on the storm has been received as yet in Manila by the end of August. From August 1 the typhoon was moving NW. headed for Swatow. The barometers fell there to 27.53 inches at 1:30 a. m. of August 3, dead calm was observed, and a terrific tidal wave accompanied the passing of the center.

The following short description of the storm, received from Mr. A. MacGowan, Bradley & Co., Swatow, and observations taken on board the British Steamer *Lok Sang* may be of interest to our readers.

I am sending to you some meteorological readings of the disastrous typhoon, the center of which passed over this port during the night and morning of 2d and 3d August. I feel sure you will like these. The lowest corrected reading observed by three different people was 27.53, which is certainly a most remarkable figure—never known here before. I have been in many typhoons, experienced three "centers" in my time, but nothing approached this storm in its terrific force and appalling results. It is estimated that at least 50,000 lives were lost, drowned and washed away in a few hours—too horrible to contemplate.

The register on our barograph could not record the readings, which was a great pity. One captain estimated the force of the wind at 100 miles per hour.

The *S. S. Choy Sang* dragged badly, cables parted, and has become a total loss. Three other vessels are still high and dry in various parts of the harbor.

Meteorological observations taken on board the British steamer "Lok Sang."

Date.	Pressure corrected.	Remarks.
Aug. 1:		
Noon.....	29.40	
2:00 p. m.	29.40	
4:00 p. m.	29.30	
6:00 p. m.	29.27	
8:00 p. m.	29.30	
10:00 p. m.	29.32	
Mdt.....	29.30	
Aug. 2:		
2:00 a. m.	29.30	
4:00 a. m.	29.25	
6:00 a. m.	29.27	Light NW. winds.
8:00 a. m.	29.25	
10:00 a. m.	29.25	
Noon.....	29.25	
2:00 p. m.	29.20	
4:00 p. m.	29.20	1:00 p. m. Heavy squall. Wind veered to E.
6:00 p. m.	29.15	
8:00 p. m.	29.05	
9:00 p. m.	29.00	Wind increasing in force from NE.
10:00 p. m.	28.90	
10:30 p. m.	28.80	
11:00 p. m.	28.70	
11:30 p. m.	28.55	Heavy squalls from NE. with very short intervals.
Mdt.....	28.50	
Aug. 3:		
0:30 a. m.	28.20	Blinding rain and continuous NE. winds of hurricane force.
1:00 a. m.	27.75	
1:30 a. m.	27.53	
Approximately 1 hour lull when wind came away from SW. with increased force. Tidal wave commenced to rise at 11:30 p. m. and rose to 12 feet above H. W. O. S. T. and commenced falling after the center passed.		
2:00 a. m.	27.30	
2:30 a. m.	28.10	
3:00 a. m.	28.50	
3:30 a. m.	28.60	
4:00 a. m.	28.95	Squalls abating at 4:30 a. m.
5:00 a. m.	29.10	
6:00 a. m.	29.15	
8:00 a. m.	29.25	
10:00 a. m.	29.35	
Noon.....	29.45	

Three severe typhoons and three depressions or ordinary typhoons across the Eastern Sea.—The first of these typhoons appeared on the 4th east of the Loochoos in

about 134° longitude E. and 26° latitude N. It moved W. by N. across the Loochoos and the Eastern Sea, and entered China south of Shanghai during the night of the 6th. The approximate positions of the center at 6 a. m. of the 5th, 6th, and 7th were:

August 5, 6 a. m., 129° 15' longitude E., 26° 55' latitude N.
 August 6, 6 a. m., 125° 00' longitude E., 28° 05' latitude N.
 August 7, 6 a. m., 120° 00' longitude E., 29° 55' latitude N.

The *S. S. Karachi Maru* being in 125° longitude E., 28° latitude N., reported a barometric minimum as low as 737.1 mm. (29.02 ins.) at 6 a. m. of the 6th.

The second typhoon was shown by our weather maps as formed on the 5th to 6th to the east of southern Luzon, in about 14° or 15° latitude N. and 132° or 133° longitude E. It moved NNW. until the 11th, when, after crossing the Loochoos, it inclined westward. Following are the positions of the center at 6 a. m. of the 10th, 11th, and 12th:

August 10, 6 a. m., 127° 50' longitude E., 24° 00' latitude N.
 August 11, 6 a. m., 125° 50' longitude E., 26° 45' latitude N.
 August 12, 6 a. m., 122° 45' longitude E., 27° 35' latitude N.

The third typhoon appeared near the Loochoos on the 29th, although it can be traced with some probability from the neighborhood of the Ladrone Islands beginning August 25.

The center was situated at 6 a. m. of the 29th, 30th, and 31st as follows:

August 29, 6 a. m., 128° 20' longitude E., 25° 40' latitude N.
 August 30, 6 a. m., 125° 45' longitude E., 27° 05' latitude N.
 August 31, 6 a. m., 123° 05' longitude E., 28° 25' latitude N.

Accordingly, the typhoon was moving to NW. by W. while traversing the Eastern Sea. On August 31 it inclined somewhat to the north and passed near to the south of Shanghai during the night of August 31 to September 1, moving NW. or NNW.

About the other three less important typhoons or depressions of the Eastern Sea we will only say that one of them formed on the 16th about 300 miles east of northern Luzon and moved N. until in the neighborhood of the Loochoos when it inclined westward on the 18th. The other two were formed just N. of Formosa on the 22d and 26th, respectively, and moved slowly ENE. until they disappeared after two or three days. The first filled up east of the northern part of the Loochoos, and the second in the Eastern Sea itself before reaching the Loochoos.

Japan typhoon.—Our weather map showed this typhoon on the 19th to the E. of the northern Ladrone Islands, in about 154° longitude E. and 18° latitude N. It moved NW. reaching the Bonins on the 22d, the barometer having fallen there to 724 mm. (28.50 ins.). On the 23d the typhoon recurved northeastward, the center passing near and to the south of Tokio at about noon of the 24th; then it moved NNE. near the eastern coast of Japan in the afternoon of the 24th and on the 25th.

Two depressions or typhoons over or near the Ladrone Islands.—The first of these depressions or typhoons was noticed south of Guam on the 5th, and probably recurved northeastward on the 6th to the W. of the Ladrone Islands. The second appeared on the 11th to 12th N. of Guam, over the central part of the Ladrone Islands, and moved probably N. and NE. on the 13th and 14th. Lack of observations makes it impossible to give these tracks as certain or to decide whether they were typhoons of any great importance.